and these are succeeded by others, in which the threads begin to collect into nets (Hydrodictgon), like the example before you.

This simple plant shows no distinction between leaf and stem and is also destitute of flowers. The fucoidae characterize the lowest zone of animal life, that it is to say, where these plants are found, are also to be detected the animals at the lowest range of the Zoological kingdom. If you, therefore, take into consideration that the Graptolite, a kind of Zoophyte, exists in abundance near Keilor, you will not for a moment doubt that our strata belong to the oldest neptunic era of the world, and were deposited in the ancient marine beds which have been subsequently upheaved by internal volcanic action, forming here the cambrian or lowest silurian formation of Victoria.*

Art. XVIII.—*Observations on the Saw Fish.*

By Thomas E. Rawlinson, Esq., C.E.

[Read before the Institute, 11th November, 1857.]

I beg to submit for the consideration of the members of this Institute a brief description of a saw-fish and young taken in the Port Phillip waters.

This is no new discovery with which to startle you, and to the professed naturalist is perhaps no great novelty. Yet I have ventured to submit to you the few facts of which I have become possessed, in the hope, that such may be at least interesting to the many, and useful as a memorandum to the naturalist in his more abstruse and elaborate researches.

The fish, which is the subject of this notice, is that generally known as the saw-fish, from the peculiar saw like snout with which the fish is armed. Naturalists class it in the Ray family, although in external appearance it more nearly resembles the shark tribe. Some of the saw-fishes have been known to attain the length of from 12 to 15 feet.

This specimen taken in Hobson's Bay was, however, only 3 feet 6 inches in length from the end of the snout to the extreme end of its tail. Of this the snout occupied nine inches, being two and a half inches wide at the base, and tapering to one half inch in width at the extremity, whilst its thickness was inconsiderable. Along

* Vide Transactions Philosophical Society, 1855, p. 228, "On the Primary Upheaval of the Land round Melbourne, &c." By this Author.

each edge it was armed with tooth-like spines, even in line, but irregular in length, varying from one-sixteenth to one-fourth of an inch.

The pectoral fins, when extended, measured from tip to tip fourteen inches.

Two tentacula projected from the underside of the snout, three inches in length, and equi-distant from the end.

The mouth Chevron-shaped, and situated under the base of the snout.

Upper and lower maxillaries armed with several rows of canine teeth, recurved towards the interior of the mouth.

The nostrils one and a half inches forward of the mouth, and also situated on the underside of snout,—one and one-fourth inches apart,—the cochleated orifices oval, with curled process on outer free margin of openings.

Gill openings, five in number, having a ventral aspect.

Vent opening, situate between the posterior insertion of the ventral fins.

There are pectoral and ventral fins, but no anal fin. Two dorsal fins (the first being situate over the vent), and a caudal fin of moderate size.

Eyes large and oval, the greatest diameter being in the direction of the length of the fish.

Spiracles situated close upon and posterior to the orbits.

The shape slender, and tapering gradually to the tail. The cross section of the fish through the first dorsal being nearly a triangle with the apex rounded off, the underside of the fish being flat throughout.

The general colour, light greyish brown on the back, and greyish white on the belly. The skin, as usual in members of the Ray and Shark families.

The fins soft as usual.

This fish was captured alive near to Gellibrand's Point in a net, and was immediately placed in a tub of water, where it lived for four hours. Before death it gradually ejected a large quantity of blood through its gill-openings.

About ten minutes after the capture of the parent fish it parted with fifteen young and well-developed fish, each of which began to swim about feebly, immediately upon passing from the mother.

The young fish were born with a vitellus attached to the abdomen, the generally assumed use of which, is to afford nourishment to the young animals until they have attained sufficient strength and vigour to provide for themselves. I

have great pleasure in presenting to the members two specimens of the young for their Museum.

I am indebted to my friend Mr. Ellery, for the present opportunity of presenting the Institute with specimens of the young, and also for the facts in connection with this paper.

Art. XIX.—*An Historical Review of the Explorations of Australia.* By Dr. Ferdinand Mueller.

WITH TWO PLATES.

[Read before the Institute, 25th November, 1857.]

If additions to the geographical knowledge of the globe in every age and in every country elicit the deepest interest, how much greater claims have the exertions of our own explorers on the citizens of Australia.

If a traveller's progress through a country, densely occupied by native races, domiciled and more or less advanced in industry, is still watched with pleasure or anxiety, even should he gain no space for widening the dominions of the Anglo-Saxon race, of how much more importance is any new information then on *that* country, which we adopt as our home, and which supports, notwithstanding its almost equal size to that of Europe less inhabitants than many of the capitals of European states? And if the wandering through the low and humid regions of an equinoctial zone, through regions little qualified for the lengthened exercise of our physical strength, still insures the interest of all, how much more deserves our enquiry into the nature of a country which is well adapted for the exercise of our labour, all the sympathy of a young and onstruggling nation?

Our desire to unveil the remaining unknown portions of Australia is not limited at this moment by demands on our patriotism or our progress alone; its future exploration is likewise claimed by our humanity, and by our honour as a nation.

With the discovery of gold a new epoch commenced in our history; and whilst in former days a wider occupation of pasture-ground was rendered by the increased transit distance to the coast, often hardly remunerative, we find now that the daily influx to our agricultural and mining population renders such extension quite imperative. Again by Cadell's enterprise, judiciously